

the interests of the union, and the hospital a benefit to the sick poor instead of being the hot-bed of disease, which the old union-house most assuredly was. That building being sold, it was partly pulled down and converted into distinct dwellings, and other detached houses have been erected on the same site: by clearing some of the ground and attention to drainage (although the latter is very imperfect), and by rendering the place more open, it has been restored to an equal degree of salubrity with the rest of the vicinity. Exemplifications of similar causes of disease (i.e. want of adequate ventilation) abound in Ware, particularly Cage-yard, Blue Coat-yard, and the courts of Amwell-end."

The inspector comes to the conclusion that "a very large amount of excessive sickness, and the great excess of premature mortality, and the expense contingent thereon, may be materially alleviated by the application of the provisions of the Health Act to the township of Ware and that portion of Great Amwell immediately adjoining." He recommends that powers be taken for carrying out the following measures:—

"First—For an abundant supply of pure water upon the constant system, filtered and carried into every tenement, for domestic use, for cleansing, and household purposes, the cost of which, I am of opinion (judging from the cost of existing water-works), will not exceed the amount of 1d. per house per week.

Second—For converting existing privies into water-closets, and, in the numerous instances where neither privies nor water-closets exist, for erecting water closets, which have been estimated at the cost of 3l. per closet, or 4s. per annum.

Third—That powers be taken for systematically draining, by means of tubular or other efficient drains, houses, courts, areas, and roads.

Fourth—That powers be taken for daily cleansing the carriage and foot ways, so as to prevent the accumulation of mud and filth.

Fifth—That powers be taken to render the manure of the town productive, which, I am of opinion, may be done in a way alike beneficial and profitable to all parties—the farmers as well as the inhabitants—when the necessary arrangements are made for its distribution.

Sixth—That all blind alleys, where practicable, be converted into thoroughfares, in order that the noxious vapours may be dissipated by currents of air, or diluted by access to large open spaces. In furtherance thereof I am of opinion that all dead walls should be taken down or made as low as possible, and open fencing substituted.

Seventh—That powers be taken for insuring a complete system of ventilation of the several rooms of tenements and parochial and other schools for the children of the poor, and also for preventing overcrowding by regulating the number of persons sleeping in rooms, according to their sizes."

In the report on Croydon, also by Mr. Ranger, the writer urges, as he does in others, that benefits would be derived by the ratepayers from general contracts for the erection and repair of drainage and water apparatus.

"Under ordinary circumstances, when accidents happen within or without a building, the tenant has to consider in what manner the repair is to be done, and, not unfrequently, how he is to pay for it: but the first question is, who is to be sent for? The men when they arrive make the repair in their own way, and regardless of any system. In a majority of cases where the plumber is sent for, more than one-half of the time is absorbed in journeys. It is suggested that much of the loss arising from the journeys, &c., would be saved, and the inconvenience much more speedily remedied, if general contracts for the repairs were adopted.

There can be no doubt of the fact that by general contracts the rate-payers would derive a very considerable benefit. By the present mode separate plumbers are employed, each doing the work in his own way; by the plan of general contracts, a considerable saving of capital would be made, and the work done on

principle, in a superior manner, and at a much less cost. If the apparatus for each house require an expenditure, say of 5l. from the owner, then, instead of enforcing an immediate outlay from him to that amount, or of obliging him to tend for a plumber and bricklayer, the whole might be commuted for an improvement-rate, say 1d. or 2d. a-week, payable half-yearly by the tenant."

It appears that there are in Croydon forty-five public-houses and thirty-three beer-shops. "Taking the receipts at 6l. per week on the average for public-houses, and 2l. per week at the beer-houses, the total annual expenditure of the parish at such houses will amount to 17,272l."

This is a suggestive sentence. Let some of our readers think over it.

It will not be difficult for those who are blindly opposed to the movement to cavil at parts of these reports, but that is not our rôle: we would by every means in our power help it forward, and aid in leading to the adoption of measures calculated to lessen suffering, and lengthen life; to save money, and elevate the moral character of the community.

ON THE HISTORY OF THE POINTED ARCH.

In attempting to trace the history of the pointed arch, it is not my intention to enter upon the various theories which have been proposed to account for its invention: it would be irrelevant to my present purpose to discuss whether it arose from the intersection of two round arches, as proposed by Dr. Milner, or whether it was suggested by the intertwining branches of a grove of trees, as proposed by others, even if it could be shown that it arose from any such circumstance, which I do not myself believe it can. As the question was very distinctly stated by Dr. Whewell, in his notes on German Churches,—"These only tend to show how the form itself, as an arch, may have been suggested, not how the use of it must have become universal." It appears to me that the discussion of such questions can lead to no really practical result, and, on the contrary, tends to do harm,—as, while men are discussing purely theoretical points, their attention is diverted from the real facts of the case. The tendency to theorise instead of observing, seems to have been the first great mistake committed in treating this question; but a second has been, confining the question to the eleventh or twelfth centuries, and discussing only whether it was then invented by the French, English, or Germans, instead of treating the question as a whole. What I propose is, to widen the base of the inquiry, by placing the whole history of the pointed arch before you; and if I succeed in doing this distinctly, though it must be very succinctly, you will be as able as I am to answer the previous question for yourselves, as the whole will resolve itself into a question of probability. The principal point, however, is to place the facts of the case before you. In doing this, I shall have to bring before you four different series of pointed arches.

The first, commencing with the ancient known buildings, and extending down to the period of the Roman empire.

The second, commencing with the decline of the Roman influence, and extending to the present day,—in the countries of the east, to which these two classes of arches are confined.

The third class appears in the south of France alone, in the age of Charlemagne, and extends to the eleventh century, when it was superseded by the round-arched, or Norman or Lombard style; which last again gave way, in the twelfth century, to the true Gothic pointed arch, which forms the fourth class, and which prevailed almost universally over the whole of Europe till the time of the Reformation, in the sixteenth century.

There may, perhaps, at first sight, be some difficulty in admitting the four series into the category of arches at all, as none of them are constructed on the radiating principle; and in modern times, at least, the usual definition of

an arch is,—"A curvilinear archivolt, composed of two or more stones radiating from one or more centres, and so placed as to retain their position from their force and gravity, without the aid of cramps or other subsidiary means." We never build arches on any other principle, and consequently restrict the term to them. In the east, however, the case is different, and the word 'radiating' must be omitted, as there the arches are as often, perhaps more frequently, constructed by placing the stones horizontally, rather than in a radiating position; and I am not quite certain if, in some cases, we would not do well to imitate the practice, as it has the advantage of getting rid of the lateral thrust, to which I attribute mainly the durability of the specimen I am about to allude to; but be this as it may, and whether it is determined to call them only pointed openings, and not pointed arches, the history of the subject will never be correctly understood till we take both into account—for the second, I think, almost certainly arose out of the first.

The specimen I will name is from the third pyramid of Gizeh, and from the roof of the sepulchral chamber. It has perhaps less title, in one respect, to be considered as an arch than any of the others, as it consists only of two stones; but it is interesting, as showing how early the curvilinear form, with a point in the centre, was used, and, consequently, how familiar it must have been to the architects of all ages.

The second example is from the pyramids of Meroe. Its age is not very well determined, but I do not think it can be far from the period I have assigned to it, or about 1000 B.C.; at all events, it is anterior to the age of Greek or Roman influence, which is all that is necessary for my present purpose. Mr. Hosking is quite positive about its being a radiating pointed arch; though, without his distinct testimony, I would have been rather inclined to believe that it was horizontally constructed; at least, I do not know of any other of that age built on the same principles. But assuming it to be as described, if radiation and thrust are the true characteristics of an arch, these two have, in this respect, more title to be considered as arches than the following, the first of which is from a tumulus near Smyrna, in Asia Minor, and interesting as being, both in size and purpose, almost a counterpart of the chamber in the third pyramid. The form of the vault, however, and the mode of construction, vary considerably in the two examples, though they are still so similar as to admit of their ascribing them to the same idea at least, though not, perhaps, to the same people.

The next example is of a gateway near Missolonghi, an instance which I quote here as serving to explain the mode of construction adopted in these buildings, which is simply that of allowing the corners of masonry to project beyond one another till they meet in the centre, thus bridging over the opening to be spanned.

Another example, from the tombs of the Atreidæ, at Mycenæ, combines the methods shown in the two last, the curvilinear form being retained for the vault as in the first instance, the straight-lined for the openings, but with the addition of an architrave cutting across the opening at a certain height, which was, no doubt, a great improvement on the preceding mode.

A further example, from a city gateway at Arpino, in Italy, shows the curvilinear form adapted to an opening, which, in the previous examples, was only applied to vaults, and was so obvious an improvement, not only from its greater beauty, but from its convenience, that the straight-lined form was never afterwards, so far as I know, adopted.

In an example from an aqueduct at Tusculum, we have a further innovation, inasmuch as the horizontal construction is not continued to the summit, but an Egyptian arch is used to complete it. It is evident that the next step to this would be using the radiating arch, as we now use it, but it seems to have stopped there, for some time at least, as I shall have occasion to show in speaking of the Saracenic style in India.

The last of this series I shall name is from a gateway at Apes, in Asia Minor, which, from the character of its masonry and other